April 6, 2011

Phillip Isenberg, Chairman
Delta Stewardship Council
980 9th Street, Suite 1500
Sacramento, CA 95814

Dear Chair Isenberg, Council, and Staff,

American Rivers would like to compliment Council and Staff on the preparation of Draft two of the Delta Plan, and appreciates the opportunity to comment and participate in this process. American Rivers is committed to protecting and restoring rivers for the benefit of human and natural communities that depend on them. As such, we offer the following comments with respect to Chapter 7 of the Second Draft Plan, "Reduce Risks to People, Property, and State Interests in the Delta." We first offer general feedback followed by specific findings, policy, and regulatory recommendations. We previously provided comments on risk reduction elements that were not adequately addressed in Draft Two. Please see our previous comments for more detail on the underlying rationale for our recommendations.

**Expand Conveyance capacity through constrained reaches in the Delta.**
The Central Valley and Delta flood control system is too small to safely convey a large flood from upstream areas through the Delta, and climate change and sea level rise will further exacerbate this problem with larger and more frequent floods. Page 41 of Draft Two of the plan calls for prohibition of development on areas that may be necessary to expand flood conveyance capacity to safely convey floods through the Delta, but the draft omits some key areas. The text of the Delta Plan should specifically clarify that these floodplain areas are necessary to protect the potential to expand flood capacity to safely convey future floods, such as an "ARk Storm" event, around vulnerable urban areas and through the Delta.

Although the options for expanding conveyance capacity through the Delta are extremely limited, the Council overlooked some key opportunities that should be protected as options to significantly enhance public safety. For example, a bypass to route water off of the Sacramento River at Garcia Bend onto land east of the Sacramento deep water shipping channel could significantly reduce flood stage (and flood risk) near the Pocket in Sacramento, one of the regions' most vulnerable areas. Therefore the Delta Stewardship Council's list of protected flood plain areas necessary to expand future capacity in the Delta Plan should also include:

- The western section of RD 999 along the Sacramento deep water shipping channel encompassing a one-mile wide strip from the Sacramento River at Garcia Bend on the north to Prospect Island on the south. This area is mostly in the primary zone and is entirely outside existing City limits.

- Areas east and west of the Northern Yolo Bypass including the Elkhorn Basin between the Yolo Bypass and the Sacramento River upstream of the Sacramento Weir.
- Areas west of the southern Yolo Bypass including the Cache Slough complex.
- Fabian Tract, portions of Roberts Tract along the San Joaquin and Middle River, Union Island along both Middle River and Grant Line Canal, and unincorporated areas south of Old River and north of Tracy.

Restoration in these areas also provides opportunities for the Delta Plan to achieve multiple ecological benefits.

**Prevent further development in deep floodplains in the secondary zone and promote infill**. In addition to prohibiting development on floodplains necessary to safely convey flood flows, the Council should also prohibit all new development on deep floodplains. Deep floodplains are low-elevation floodplains, often even below sea level that are subject to rapid, catastrophic, and prolonged inundation from levee failure. Page 40 L-14 of the Delta Plan Draft 2 correctly states that "the proposal shall minimize human exposure to risks that could result in loss of life," and the language should be amended to include: *"such as building on lands below sea-level."*

These areas include:

- Hotchkiss Tract
- Bethel Island
- Veale Tract
- Byron Tract
- Shin Kee Tract
- Rio Blanco Tract
- Bishop Tract
- Shima Tract
- Wright-Elmwood Tract
- Rough and Ready Island

Communities that permit urban development below sea level are accepting and exposing residents and taxpayers to an involuntary, unnecessary, and unreasonable risk. A levee failure during the winter flood season could rapidly flood homes to depths of six feet or more with cold water at 55 degrees Fahrenheit or less. These deep areas are likely to be inundated for weeks or months because the water will not drain without active intervention, levee repair, and pumping. Urbanization of lands below sea level also creates unique water quality problems because urban storm water must be pumped off the new developments. Given the extremely high consequences in terms of loss of life and property damage, and given the heavy financial burden required of local jurisdictions to build and indefinitely maintain flood control and drainage infrastructure on these marginal lands, the Delta Plan should prohibit development of deep floodplains, particularly on all lands below mean higher high water.

Prohibiting development can save state and local governments millions of dollars in flood response and long-term maintenance costs and need not stifle local economic development. To offset claims that prohibiting floodplain development will limit growth, the Delta plan should promulgate incentives to promote urban infill and redevelopment for communities that restrict development of deep floodplains.

**Manage residual risk on lands behind levees where development is already permitted.** Development behind levees is still subject to very high risk of flooding. While prohibiting floodplain development is generally the best way to manage the risk, it is also possible to employ a variety of other strategies to mitigate risk behind levees where development has already been permitted. The Delta Plan should explicitly encourage local jurisdictions to implement a broad range of strategies to manage residual risk including:

- Mandatory flood insurance with graduated premiums
- Building and subdivision codes that minimize structural damage and optimize public safety
- Landowner notification

We offer the following specific policies and regulations based on our findings on the following pages.

Respectfully,

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Director Central Valley Flood Management

American Rivers
Thriving By Nature

## Comments of American Rivers on: Delta Plan Draft #2: Chapter 7 Reduce Risks to People, Property, and State Interests in the Delta

**Finding A:** Levees do not reduce risk. Given that flood risk is defined as the product of the *probability* of flooding and the *consequences* of flooding, while levees reduce only the *probability* of flooding, in most cases, they actually increase the *consequences* of flooding because FEMA-certified levees allow for dense urban development on floodplains that will eventually flood deeply.

> **Policy A.1:** Promote an integrated approach to risk reduction in the Delta which does not overly depend on levees or emergency response to protect from floods and includes giving rivers more room to flood, expanding the bypass system, not developing in unsafe areas, and managing the residual risk behind levees where land has already been permitted for development.

**Finding B:** The flood conveyance capacity of the Central Valley and Delta flood control system is too small to safely convey a large flood and protect against the increased risks brought on by climate change and sea-level rise including larger and more frequent floods. Increasing conveyance capacity through constrained reaches in the Delta will reduce the risk of loss of life, restore ecosystem, and protect the long-term sustainability of "Delta as Place."

> **Policy:** See policy A.1
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> **Policy B.1:** The Delta Plan shall focus investment priorities in expanding flood conveyance capacity through the Delta to accommodate for larger and more frequent floods.
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> **Policy B.2** To be consistent with the Delta Plan, General Plan updates must specifically spatially demonstrate how the community will protect developed areas from flooding and from foreseeable conditions associated with climate change including sea level rise increased flood magnitude and frequency.
>
> > **Regulation B.2.1:** In order to be consistent with the Delta Plan, covered actions and new developments must show evidence of adequate protection against sea-level rise and projected increased floodwaters.
>
> **Policy B.3:** Investment priorities for reducing risk shall focus on expanding conveyance capacity in the Delta by constructing flood bypasses and levee setbacks, and restoring

floodplains in key locations in the Delta to provide multiple benefits including ecosystem restoration and preserving "Delta as Place."

**Policy B.4:** In order to be consistent with the Delta Plan, covered actions shall not diminish existing and potential value as floodplains in the following geographical areas:
(1) Areas east of the Sacramento Deep Water Shipping Channel
(2) Areas east and west of the Yolo Bypass
(3) The San Joaquin River/South Delta Floodplain, including land adjacent to and south of Paradise cut.

**Policy B.5:** In order to be consistent with the Delta Plan, covered actions shall not diminish the potential to set back-levees to expand flood conveyance, create vegetative buffers against wave erosion, and restore migratory corridors for aquatic species in the following geographical areas:

(1) Areas along the San Joaquin River between Vernalis and Mossdale
(2) Areas along the Sacramento River between Colusa and Natomas
(3) The west bank of the Sacramento River from the upper end of the deep water ship channel to Levee Access Road at Riverview in the south eastern corner of West Sacramento.
(4) The east bank of the San Joaquin River from Mossdale to Weston Ranch and along the west bank from Old River to Highway 4.
(5) The north bank of Old River from San Joaquin River to Old Tracy Road on Grantline Canal.
(6) The north and south bank of Old River from Paradise Cut to Herdyn Road.
(7) Grantline Canal from Salmon Slough to the downstream confluence with Old River.
(8) Along Middle River from Old River to Howard Road, particularly the west bank.
(9) Other reaches of Delta channels bordered by undeveloped land with elevations above low tide elevations.

> **Regulation B5.1:** Prohibit permanent development within 500 feet of a levee to preserve the option for levee setbacks in the geographical areas listed above in Policy B.5.
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> **Regulation B.5.2:** State and local flood control agencies, and all new general plan subdivision plans must identify areas that may be used for setback levees and protect those areas from future development until studies have been completed to determine the feasibility and appropriate design for levee repairs.
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> **Regulation B.5.3:** Investments for levee improvements will only be made after the community first demonstrates that levee setbacks are infeasible at a particular site.

**Finding C:** Development of riverine floodplains and associated levee improvements increase flood risk by (1) sending flood waters downstream toward vulnerable urban communities, (2) restricting the natural ability of floodplains to safely convey floodwaters, (3) precluding floodplain restoration opportunities that could reduce flood risk for existing communities and

restore ecological function, or (4) placing more people and property in harm's way so when the larger flood occurs or a when levee fails, consequences are greater than were the levee not there.

> **Policy C.1:** In order to be consistent with the Delta Plan, development activities in the Delta and upstream must not increase flood risk by sending floodwater downstream toward vulnerable urban communities in and adjacent to the Delta.
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> **Policy C.2**: In order to be consistent with the Delta Plan, covered actions must not increase flood risk by restricting the natural ability of floodplains to safely convey or attenuate floodwaters.
>
> **Policy C.3:** In order to be consistent with the Delta Plan, covered actions must not preclude floodplain restoration that could reduce flood risk or restore ecological function.

**Finding D:** Development in deep floodplains significantly limits effective emergency response, increases the likelihood of death, and significantly increases property and financial damages.

> **Policy D.1** The Delta plan shall prohibit all development below sea level (mean higher high water).

**Finding E:** The costs of both flood protection and disaster recovery are high. On a cost/per unit basis, developing more densely in upland urban areas with existing adequate flood protection is a more cost-effective means of developing than building new levees and developing on "greenfields."

> **Policy E.1:** The Delta Stewardship Council shall promote urban infill to areas with adequate flood protection and minimize new development on greenfields.
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> > **Regulation E.1.1:** New development on greenfields will be permitted only after it has been proven that infilling or redeveloping in urban areas with existing adequate flood protection is infeasible.

**Finding F:** Residual Risk of inundation on land protected by levees is very high, particularly on lands that are developed and low-lying. The likelihood that land behind a certified 100-year levee will be inundated from a larger-than-design flood is 26% over a 30-year period. The likelihood that land behind 200-year levee will be inundated is about 14% over that same 30-year period. The likelihood that land behind a 200-year levee will flood over 50 years is 22 %. Further, the likelihood that land behind a certified 100-year levee will be inundated from human,

organizational, and institutional factors and errors such as construction, maintenance, design flaws, or modeling, is 78% over 30 years[1].

**Policy F.1:** Local governments and communities must take measures to manage residual risk, minimize human exposure to risks that could result in loss-of-life, and must not assume that the land behind levees is risk-free.

**Policy**: See Policies D.1 and E.1

**Regulation:** See Regulations: B.2.1 and E.1.1above

**Policy F.2:** Local jurisdictions must manage residual risk through adopting building codes that would minimize structural damage.

**Regulation F.2.1**: Under the Delta Plan, communities will be eligible for financial assistance for infrastructural improvements including roads, levees, pumping plants, or post-disaster assistance only if they adopt as mandatory the California Building Code Updates (to be established in the Central Valley Flood Planning Program).

**Regulation F.2.2:** To be consistent with the Delta Plan, structures must be built to minimize first floor damages.

**Regulation F.2.3:** To be consistent with the Delta Plan, slab-on-grade construction for residential purposes must be raised above 500year water surface elevations (WSEL).

**Policy F.3:** To be consistent with the Delta Plan, covered actions must include documentation of an adequate level of flood insurance with ***graduated premiums based on inundation depth*** for individuals, businesses, and industries in flood prone areas. (Existing Draft 2 Delta plan includes adequate flood insurance, but American Rivers recommends amending language to include "With graduated premiums based on inundation depth").

**Finding G**: In an ARkStorm scenario of large flooding, emergency response may not materialize and residents may be left to rescue or fend for themselves. Additionally, some of these areas may flood rapidly (up to one foot in only an hour), giving occupants little or no time to evacuate.

1. Human, institutional, and organizational "extrinsic" factors contribute to 80% of disasters, while natural "intrinsic" factors (such as larger storms) contribute to only 20% of all factors. Therefore, a 1% annual chance flood is actually a 4% annual chance flood considered the likelihoods of failure related to extrinsic causes. *Bea, R., Mitroff, I., Farber, D., Foster, H., and Roberts, K. (2009). A New Approach to Risk: The implications of E3. Risk Management. 11(1), 30-43.*

**Policy G.1:** Local Governments must adopt building codes that optimize public safety and individual response/evacuation.

**Regulation:** See Regulation F.2.1 above

**Regulation G.1.1:** To be compliant with the Delta Plan, all residential buildings must have a boat in the attic or on site and available in the event of an emergency.

**Regulation G.1.2:** To be compliant with the Delta Plan, all residential buildings must have a built-in vertical evacuation route.

**Regulation G.1.3:** To be compliant with the Delta Plan, all new subdivisions must have accessible high ground for safety, cross levees, and elevated evacuation routes above 500-yr WSEL. (See "Hafencity," Hamburg, Germany for example)

**Regulation G.1.4**: To be compliant with the Delta Plan, all new subdivisions and developments must have emergency shelters that are clearly marked and above 500-yr WSEL.

**Regulation G.1.5:** To be compliant with the Delta Plan, no living quarters/bedrooms are permitted on the lower floor of residential buildings—only vehicle and storage.

**Finding H.**: Residents living in lands protected by levees (both estuarine and riverine) are unaware of the risks and unprepared for floods. Individuals who are aware of a risk are more likely to take precautionary measures than individuals who are not aware of a risk. Similarly, individuals unaware of a risk are incapable of avoiding that risk.

**Policy H.1:** Flood risk must be fully disclosed to potential residents and property owners on land behind levees prior to occupancy.

**Regulation H.1.1:** To comply with the Delta Plan, potential land and property owners and renters must sign a statement that reads: "*I acknowledge that the Delta Stewardship Council has deemed my property subject to catastrophic flooding"* prior to any transaction.

**Regulation H.1.2:** To comply with the Delta Plan, Real Estate Agents must disclose that houses in this area are behind levees and subject to rapid and deep inundation.

**Regulation H.1.3:** To comply with the Delta Plan, all model houses in new subdivisions and developments must post signs disclosing the area as behind a levee and subject to deep inundation.

**Regulation H.1.4:** To comply with the Delta Plan, all model houses in new subdivisions and developments must post a projected high-water marker in a prominent location such as the front door.

**Regulation H.1.5:** To comply with the Delta Plan, all new subdivisions and developments must post projected high-water markers on lampposts, street signs, and telephone poles.

**Regulation H.1.6:** To comply with the Delta Plan, all new subdivisions and developments must name street signs corresponding with levees or the specific reach of the river to raise awareness.

**Regulation H.1.7**: To be compliant with the Delta Plan, all new subdivisions and developments must maintain levees with names and signs posted on the levees.

**Finding I:** Often local districts have trouble accessing emergency contractors during an emergency because they have already been spoken for. A pre-placed contract can improve emergency response time.

**Policy I.1.:** To be consistent with the Delta Plan, municipalities shall coordinate with office of emergency services and emergency contractors to ensure that developments and subdivisions have access to emergency response when it is important without delay.

**Regulation I.1.1:** To be compliant with the Delta Plan, new subdivisions and development must have a pre-placed contract for emergencies prior to any house being sold.

**Finding J:** Economic downturns can prevent full build-out of a subdivision or planned communities for years or decades. To the extent that levee maintenance and drainage infrastructure assessments are predicated on full build-out, residents of unfinished developments can be unfairly burdened with unmanageable costs – creating a downward spiral of disinvestment. Ultimately the state and federal government is faced with the difficult choice of abandoning these communities or offering scarce public funds to maintain public safety.

**Policy** J: See Policies D.1 and E.1

**Policy J.1:** To be consistent with the Delta Plan, municipalities that approve any level of floodplain development must require upfront escrow accounts that are adequate to maintain levees within an urbanizing district indefinitely.

**Regulation J.1.1:** Prior to selling a single parcel, developers must establish an escrow account large enough to fund levee and infrastructural maintenance throughout the entire building and process.

**Regulation J.1.2:** As properties are sold, municipalities may only withdraw money from the account as equal funds are simultaneously replaced with new monies.

**Regulation J.1.3:** The escrow account must remain fully funded until the entire development is built.